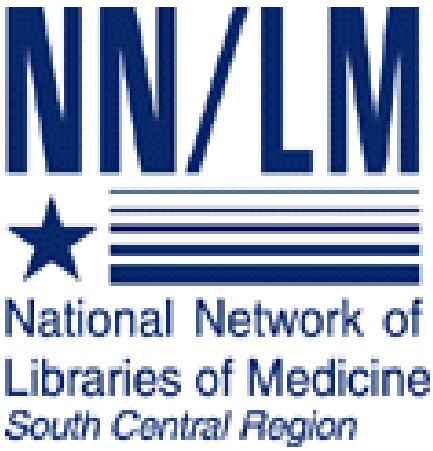


Using PubMed

http://PubMed.gov

National Network of Libraries of Medicine, South Central Region
Houston Academy of Medicine-Texas Medical Center Library
1133 John Freeman Blvd.
Houston, TX 77030

NLM Contract No.: N01-LM-1-3515

January 2004

SCOPE OF PUBMED

Entrez System

- A search and retrieval system that integrates information from databases at the National Center for Biotechnology Information (NCBI) including PubMed, the Journals Database and the MeSH Browser

Coverage

- Approximately 12 Million records
- 1953-Present
- Close to 4600 current journals in English and 70 foreign languages are indexed
- Medicine, nursing, dentistry, veterinary medicine, health care system, preclinical sciences
- Includes MEDLINE, OLDMEDLINE, In Process Citations, and Publisher-Supplied Citations

MEDLINE

- NLM's premiere database of biomedical journal citations
- Coverage 1966-present
- Citations are listed in PubMed with a [PubMed - indexed for MEDLINE] notation

☐ 6: Stephenson J.

Monkeypox outbreak a reminder of emerging infections vulnerabilities.
JAMA. 2003 Jul 2;290(1):23-4. No abstract available.
PMID: 12837700 [PubMed - indexed for MEDLINE]

OLDMEDLINE

- Current coverage 1953-1965.
- NLM expects to continue converting older citations and adding them to PubMed
- Have no abstracts
- Citations are listed with a [PubMed - OLDMEDLINE for Pre1966] notation

☐ 1: MCCONNELL SJ, SPERTZEL RO, HUXSOLL DL, ELLIOTT LH, YAGER RH.

PLAQUE MORPHOLOGY OF MONKEYPOX VIRUS AS AN AID TO STRAIN IDENTIFICATION.
J Bacteriol. 1964 Jan;87:238-9. No abstract available.
PMID: 14105195 [PubMed - OLDMEDLINE for Pre1966]

In Process Citations

- Provides basic citation information and abstracts before the full records are prepared and added to MEDLINE
- Citations are listed with a [PubMed - in process] notation

☐ **3:** Maskalyk J.

Monkeypox outbreak among pet owners.
CMAJ. 2003 Jul 8;169(1):44-5. No abstract available.
PMID: 12847040 [PubMed - in process]

Publisher-Supplied citations

- Publishers can send citations electronically to PubMed
- Citations are listed with a [PubMed - as supplied by publisher] notation

☐ **1:** [No authors listed]

Update: Multistate Outbreak of Monkeypox--Illinois, Indiana, Kansas, Missouri, Ohio, and Wisconsin, 2003.
JAMA. 2003 Jul 16;290(3):325-327. No abstract available.
PMID: 12865364 [PubMed - as supplied by publisher]

SEARCHING PUBMED

Performing a Simple Search

- Enter search terms in the query box and click on the *Go* button

Automatic Term Mapping

- In a simple search, terms are simply typed in the search bar with no tags. In PubMed, terms without tags are matched against lists and tables in this order:
    - MeSH (Medical Subject Headings) Translation Table
    - Journals Translation Table
    - Author Index (Author name format: last name first initial second initial, i.e. Smith JC)

Phrase Searching

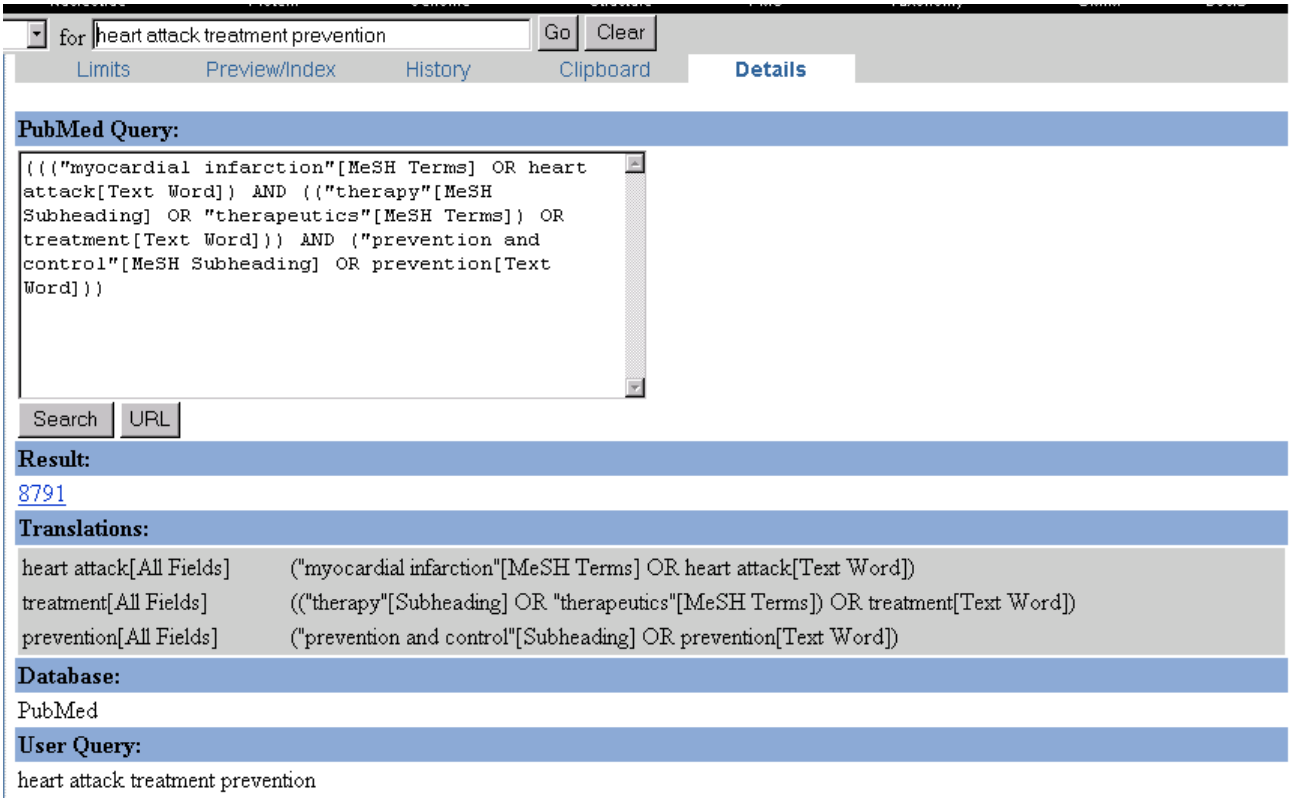
- The PubMed system searches for a phrase when:
    1) The search tag [tw] is entered after the phrase
    2) The phrase is in quotation marks
    3) It is an hyphenated phrase
    4) The phrase is truncated

Truncation

- Truncation allows you to find all terms that begin with a given text string
- Place an asterisk (*) at the end of a term to search for all terms that begin with that term
- The asterisk can only be used at the end of a term
- Truncating a term will override the PubMed automatic mapping feature

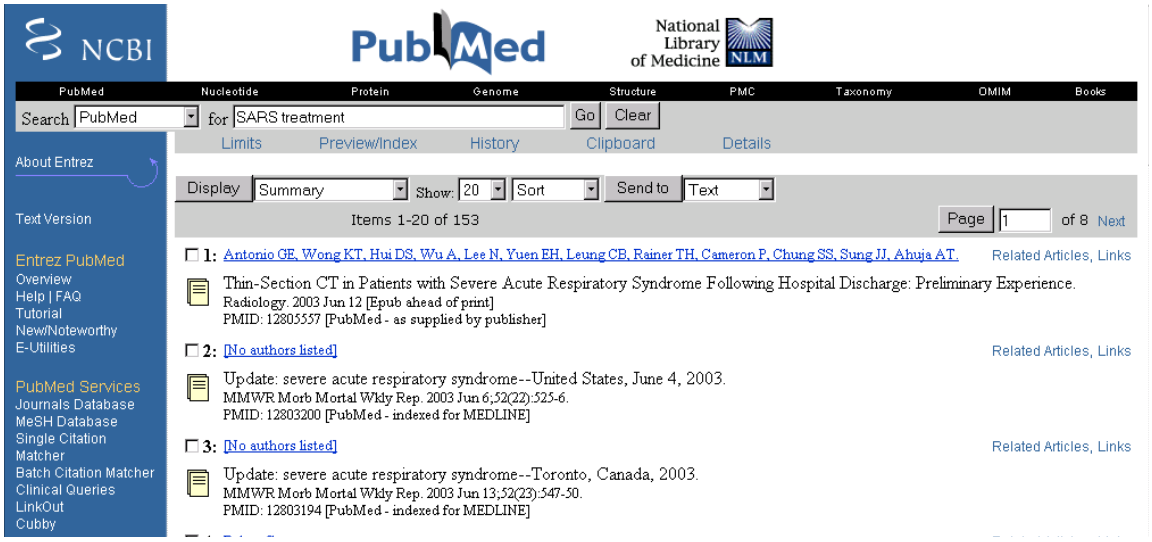
Details

- *Details* allows you to view your search strategy as it was translated using PubMed's automatic term mapping and search rules and syntax
- Click on *Details* to view the *PubMed Query* box and the *Translations* section
- The terms in brackets detail how the search was interpreted
- *[MeSH Terms]* means the search term was mapped to a MeSH heading
- *[Text Word]* means the search term was found to be a known term or phrase in the database
- Any search term with *[All Fields]* after it in the *PubMed Query* box means the term was not known in the database and the term was searched as a keyword in every field



- The *PubMed Query* box allows you to edit a search strategy and run another search by clicking on the *Search* button
- The *URL* button allows you to save a search strategy as an HTML file
- Clicking on the number of results returns you to the Search Result Screen

SEARCH RESULTS SCREEN

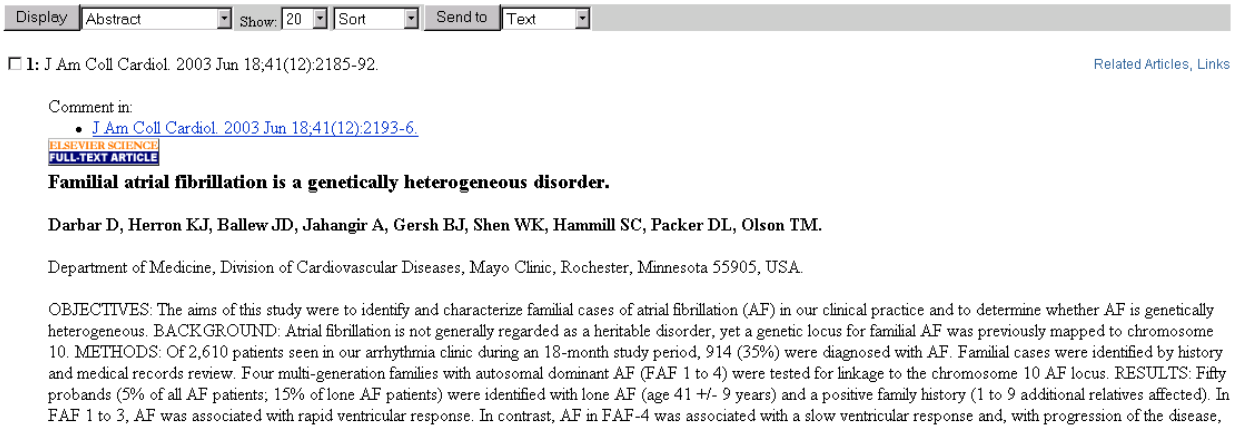


Query Box

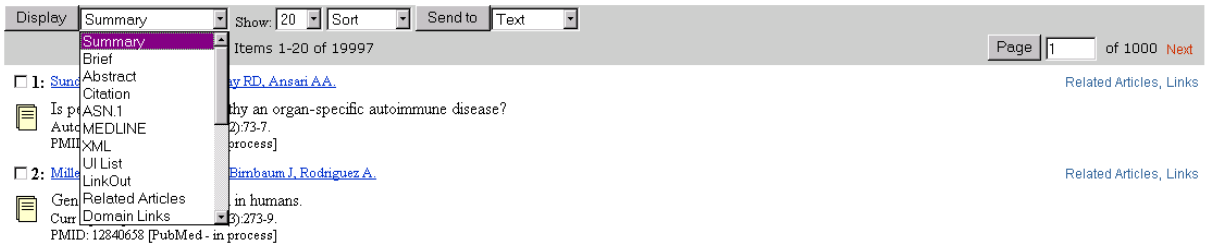
- On the results screen, the query box is always active
- The *Clear* button will allow you to delete the contents of the query box so you can start a new search

Display Formats

- The default display is the *Summary* format
- Clicking on the author names takes you to the *Abstract* display of the citation
- Notice that some citations include links to Comments or Corrections:



- To change the display format click on the *Display* dropdown box
- Choose a format
- Click on the *Display* button to display results in the new format



Summary format: Complete citation including author(s), title of article, journal source, and PubMed Unique Identifier (PMID)

Abstract format: Everything in the *Summary* plus the abstract of the article

Citation format: Everything in the *Abstract* plus the MeSH headings for the article

MEDLINE format: This gives the two-character tagged fields for all fields of the MEDLINE record. **Note:** Use the *MEDLINE* format for importing PubMed citations into bibliographic management databases (i.e. EndNote, Reference Manager, Pro Cite)

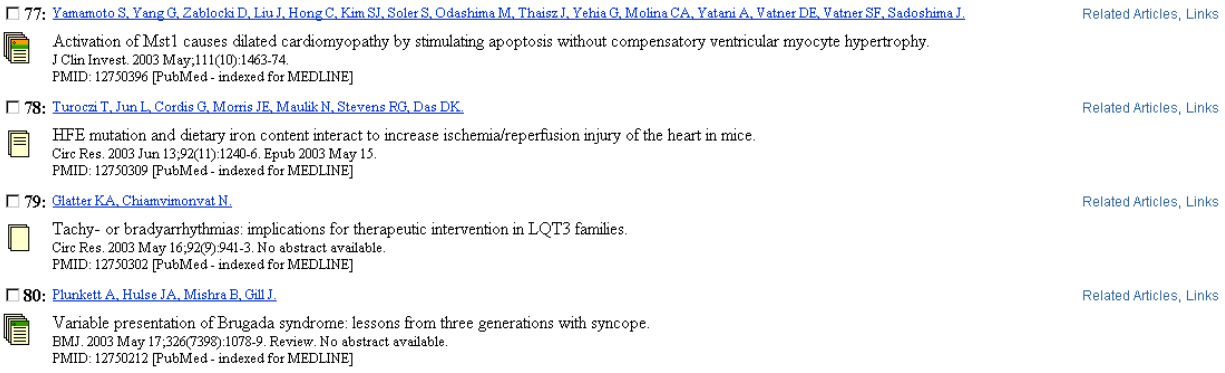
- The icons next to the citations in the *Summary* format indicates whether the citation:

has no abstract

has an abstract

is available free as Full-Text in PubMed Central

is available free as Full-Text elsewhere

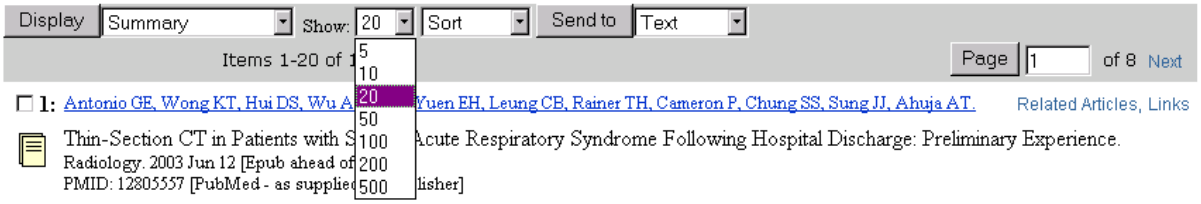


Sort

- Citations are displayed in order of most recently indexed citations first: last in, first out
- *Sort* allows you to re-sort your results by Author, Journal or Publication Date
- To re-sort the citations, select a sort field (Author, Journal, Pub Date) from the *Sort* dropdown box and click on the *Display* button

Show

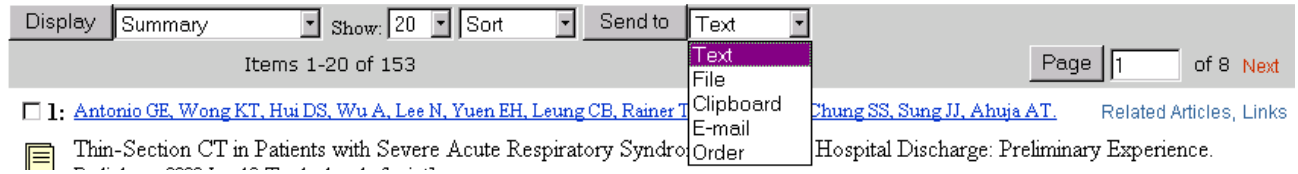
- *Show* allows you to change the number of results displayed per page
- Click on the *Show* dropdown box to change the number of documents per page
- Click on the *Display* button to redisplay the results



- *Item*s denotes the total number of citations found and which numbers you are currently viewing
- *Page* denotes the total number of pages of results and which page you are currently viewing
- *Previous* and *Next* allows you to move from one page to another
- To jump to another page, type the page number in the page box and click on the *Page* button

Send to

- The *Send to* button provides you various ways handle the search results: *Text, File, Clipboard, E-mail* and *Order*



Send to: Text

- *Text* allows you to redisplay citations using just the text of the record and omitting the Web or HTML components
- Select *Text* in the dropdown box and click on the *Send to* button
- Use your Web browser's Back button to return to your results in HTML
- The text version will display either selected citations, or if no citations are selected, all the citations on a single page

```
1:  Antonio GE, Wong KT, Hui DS, Wu A, Lee N, Yuen EH, Leung CB, Rainer TH,
Cameron P, Chung SS, Sung JJ, Ahuja AT.
 Thin-Section CT in Patients with Severe Acute Respiratory Syndrome Following
Hospital Discharge: Preliminary Experience.
Radiology. 2003 Jun 12 [Epub ahead of print]
PMID: 12805557 [PubMed - as supplied by publisher]

2:  [No authors listed]
 Update: severe acute respiratory syndrome--United States, June 4, 2003.
MMWR Morb Mortal Wkly Rep. 2003 Jun 6;52(22):525-6.
PMID: 12803200 [PubMed - indexed for MEDLINE]

3:  [No authors listed]
 Update: severe acute respiratory syndrome--Toronto, Canada, 2003.
MMWR Morb Mortal Wkly Rep. 2003 Jun 13;52(23):547-50.
PMID: 12803194 [PubMed - indexed for MEDLINE]
```

Printing

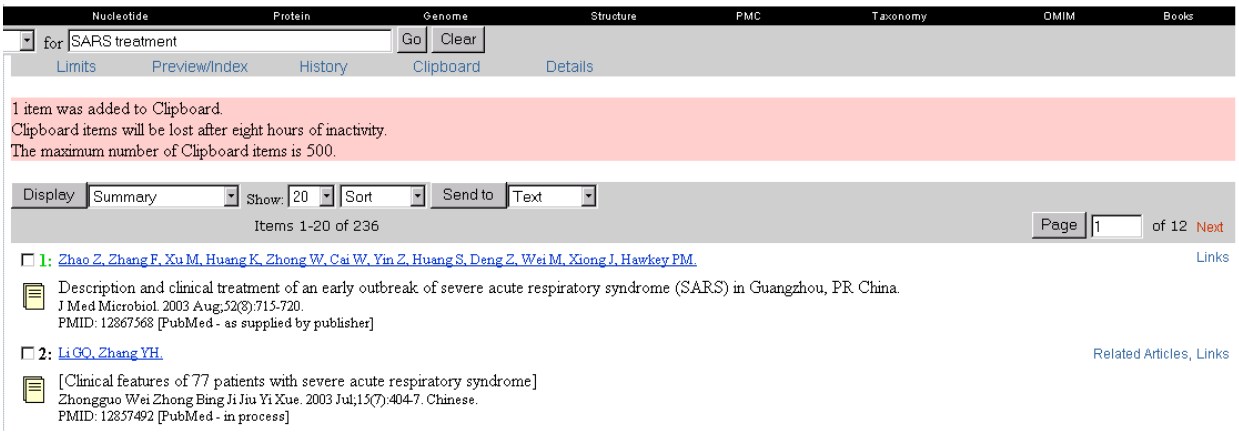
- Use the Print function of your Web browser to print a page at a time
- HINT: Use *Show* to increase the number of citation displayed on a page
- To eliminate graphics, etc., consider using the *Text* option described above

Send to: File

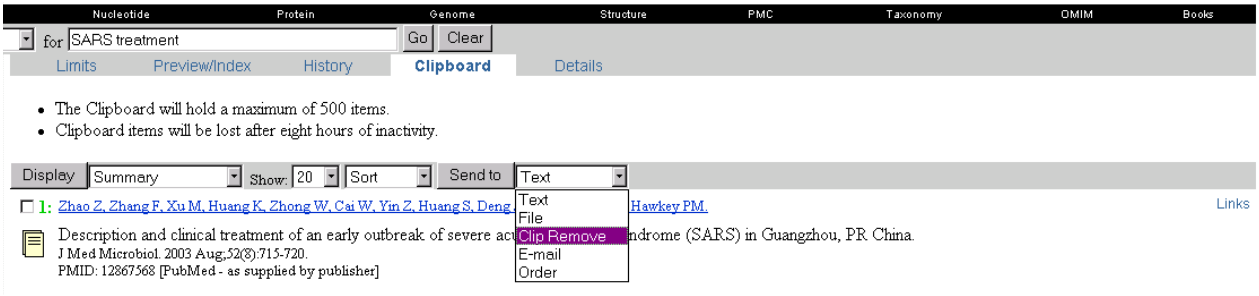
- *File* allows you to save your search results
- Select *File* in the dropdown box and click on the *Send to* button
- Though only the first batch of citations are displayed (i.e. 1-20), this option allows you to save up to 10,000 citations
- To save selected citations, click in the check box next to individual citations, and then choose the *File* option
- The saved results can be viewed in any word processor

Send to: Clipboard

- *Clipboard* allows you to save or view selected citations from one search or several searches that you may want to print, save, email or order
- To place an item on the *Clipboard*, first click on the check box to the left of the citation, then select *Clipboard* in the dropdown box and click on the *Send to* button

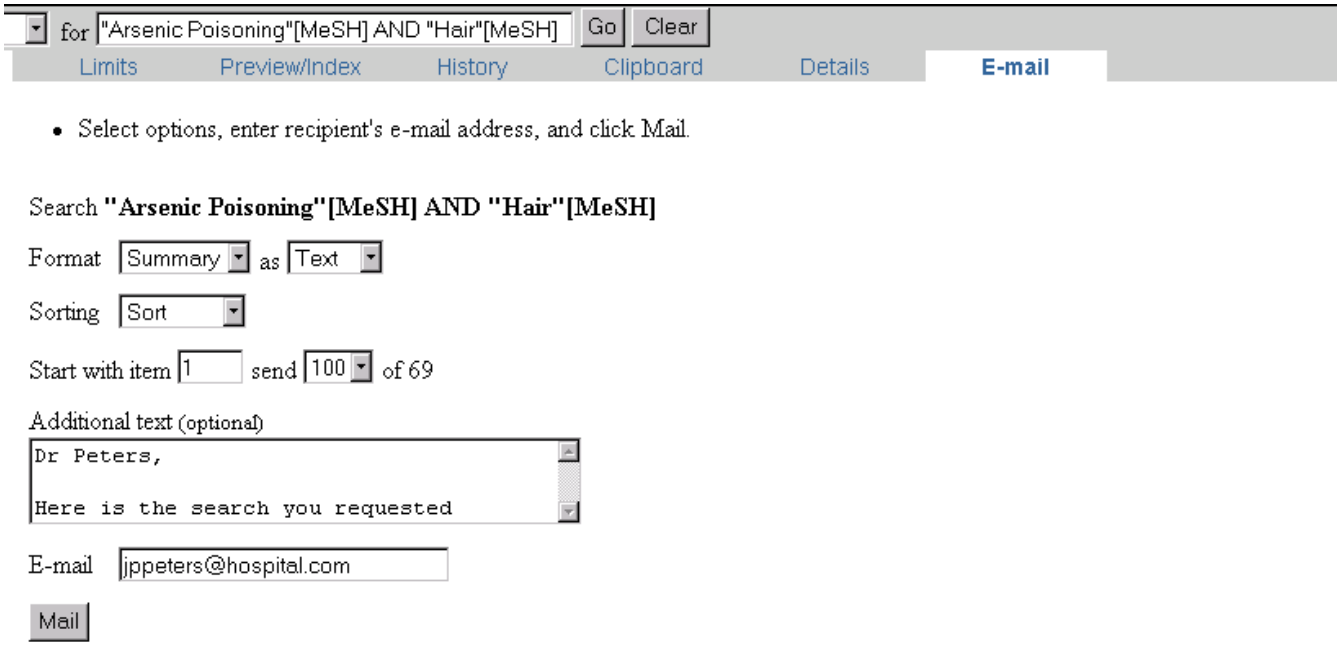


- You will receive a message in a pink box stating the number of citations added to the *Clipboard*
- Notice the citation numbers of the citations added to *Clipboard* are now green
- Adding citations from multiple searches into *Clipboard* allows you to remove duplicates
- Click on the *Clipboard* option on the *Features* bar to view the citations in *Clipboard*
- To remove any citations from the *Clipboard*, click in the check box next to the citation and then select *Clip Remove* from the dropdown box and click on the *Send to* button



Send to: E-mail

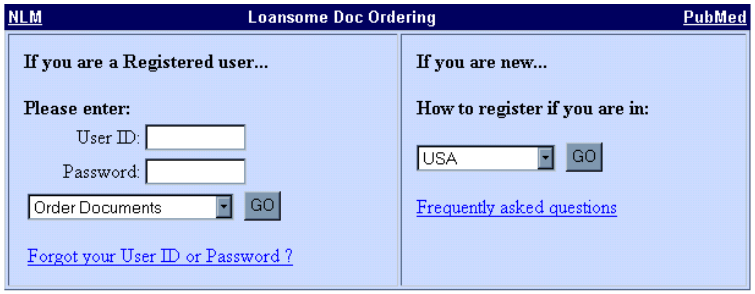
- To email your results, first click in the check box to the left of the citation, then select *E-mail* in the dropdown box and click on the *Send to* button
- On the *E-mail* page, you must select the citation display format (including Summary, Abstract and Citation) and the email format (HTML or Text)
- HTML will allow the email message to be displayed as a PubMed results page with links to Related Articles, LinkOut and other features
- For the HTML format, the recipient's email must be set for HTML view or the email will not display properly
- You can email up to 500 citations
- You can Sort the citations
- Type in the recipient's email address and click on the *Mail* button



- The email will display the sender as *Sent by Entrez* and the subject as *PubMed Search Results*

Send to: Order

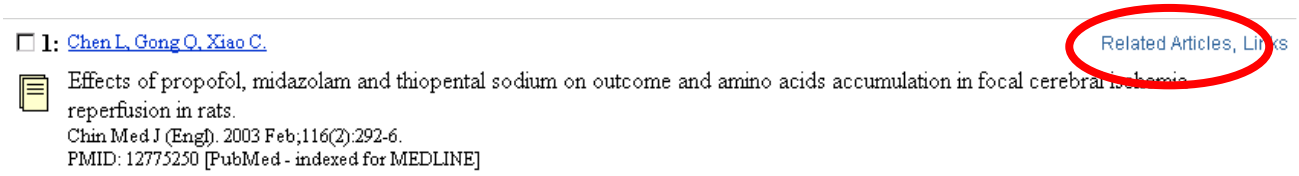
- *Order* allows to you request selected articles through Loansome Doc
- Loansome Doc lets you to request the full-text of articles from participating medical libraries
- Each library selects its own charges and service policy
- Loansome Doc is a voluntary service that medical libraries may choose to provide



- To register for Loansome Doc, you must first get a Library Ordering Identifier from a participating library (Find participating libraries at: http://docline.gov/loansome/countries_served/search_template.cfm)
- For more information on how to register and use Loansome Doc, see the Loansome Doc Tutorial at: http://nnlm.gov/mar/loansome/introduction.html

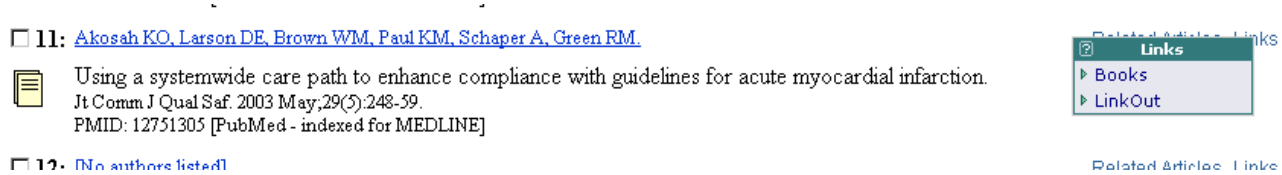
Related Articles

- *Related Articles* accesses citations in PubMed that are most closely related to the original article
- PubMed compares words from the Title, Abstract and MeSH terms using a powerful word-weighted algorithm
- The best matches for each citation are saved and stored in a pre-calculated set
- Those citations without a *Related Articles* link have not gone through the powerful algorithm process yet



Links

- Clicking on *Links* next to a citation allows you find related information in *Books*, *LinkOut* and, if available, many NCBI molecular biology databases including Protein, Nucleotide and Gene
- *Books* finds related or background information in full-text biomedical books available through PubMed



- *LinkOut* is mostly used to allow access to Full-Text articles and allows publishers, aggregators, libraries, biological databases, sequence centers, and other web resources to display links to their sites on related citations in PubMed
- Most providers will ***not*** allow access to Full-Text articles for free
- Libraries can link their e-journal holdings in PubMed to allow their affiliates to access their journals

Practice searches:

1) I need recent articles on binge drinking among college students.

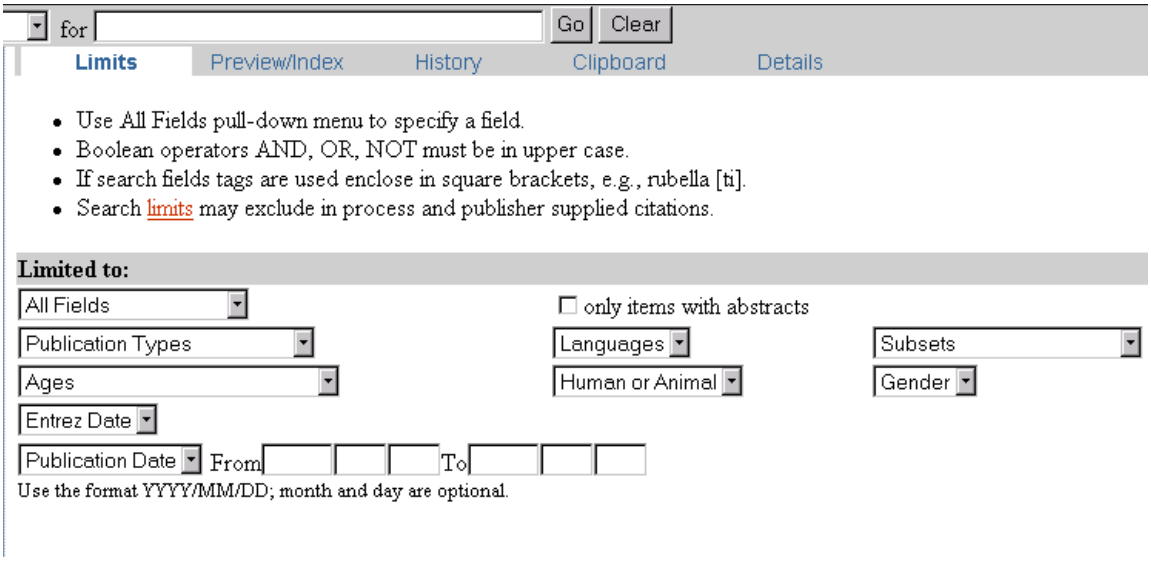
2) I need articles on the treatment of lymphatic filariasis.

3) Julius Caesar had epilepsy. What other famous people had epilepsy?

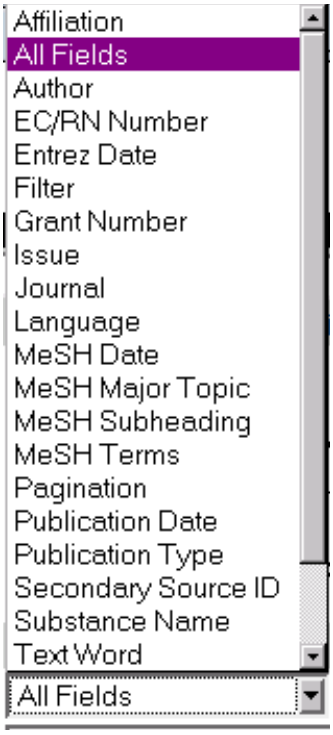
SEARCHING TOOLS

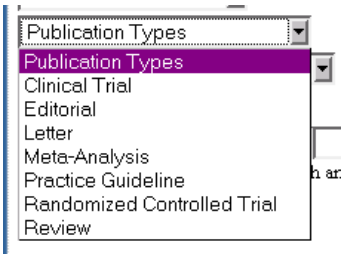
Limits

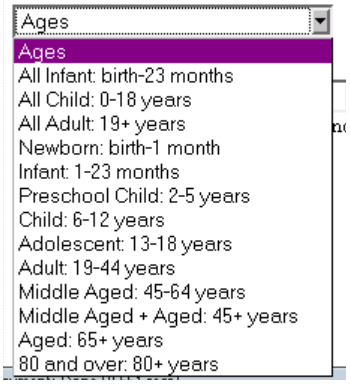
- *Limits* allow you to narrow a search by limiting to a *Publication Type, Age, Language, Human* and/or *Gender*
- Click on the *Limit* option on *Features* bar

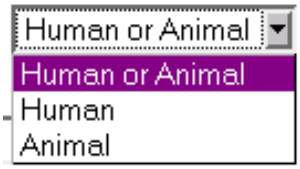


- Limit to a specific field, such as *MeSH Terms*, by using the *All Fields* dropdown box







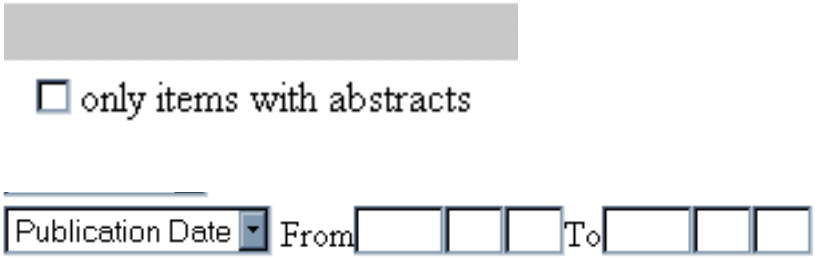


Subsets

- *Subsets* allows you to limit the search to specific grouping of journals
- *AIDS*: Filter for AIDSLINE
- *Bioethics*: Filter for BioethicsLine
- *Cancer:* Filter for CancerLit
- *Complementary Medicine:* Citations of journal articles related to complementary and alternative medicine
- *Core clinical journals*: 120 journals considered the main journals in clinical medicine
- *Dental journals:* Dental journals in MEDLINE
- *History of Medicine*: Subjects in history of medicine
- *MEDLINE:* All citations that have been indexed since 1966
- *Nursing journals:* Nursing journals in MEDLINE
- *OLDMEDLINE for Pre1966*: Filter for 1966 and older citations
- *PubMed Central:* Filter for journals in PubMed Central
- *Space Life Sciences:* Filter for SPACELINE
- *Toxicology:* Filter for TOXLINE

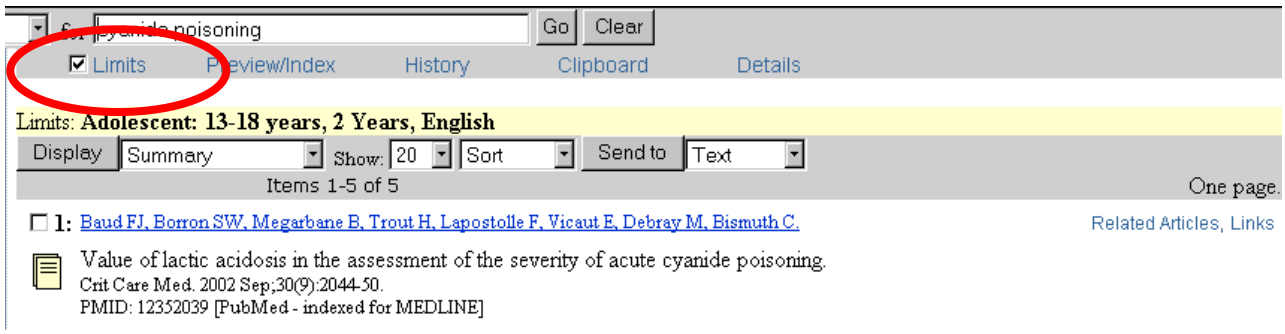
Publication Date, Entrez Date and Abstract Only

- *Only items with abstracts* allow you to retrieve only citations with abstracts
- *Publication Date* refers to the printing of the article, not the entry date into MEDLINE
- Select a range of dates by using the format indicated onscreen: YYYY/MM/DD
- *Entrez Date* refers to the date of Record Entry into MEDLINE



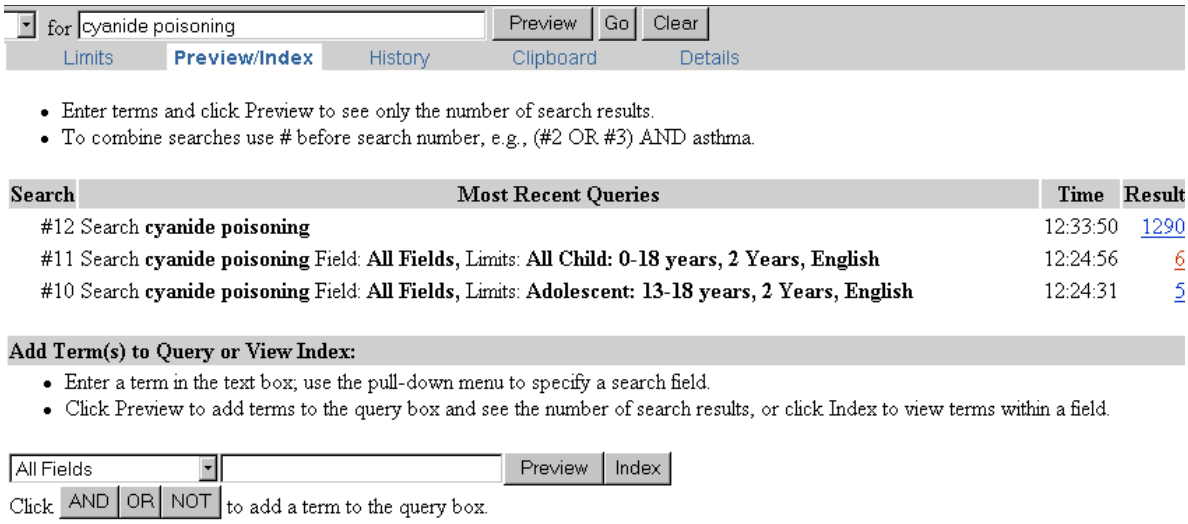
Limit Search Results

- *Limits* are retained for each search unless you click the check box next *Limits* to deselect them
- *Limits* are displayed in yellow on the top of the search result
- You can apply limits before or after entering the search terms

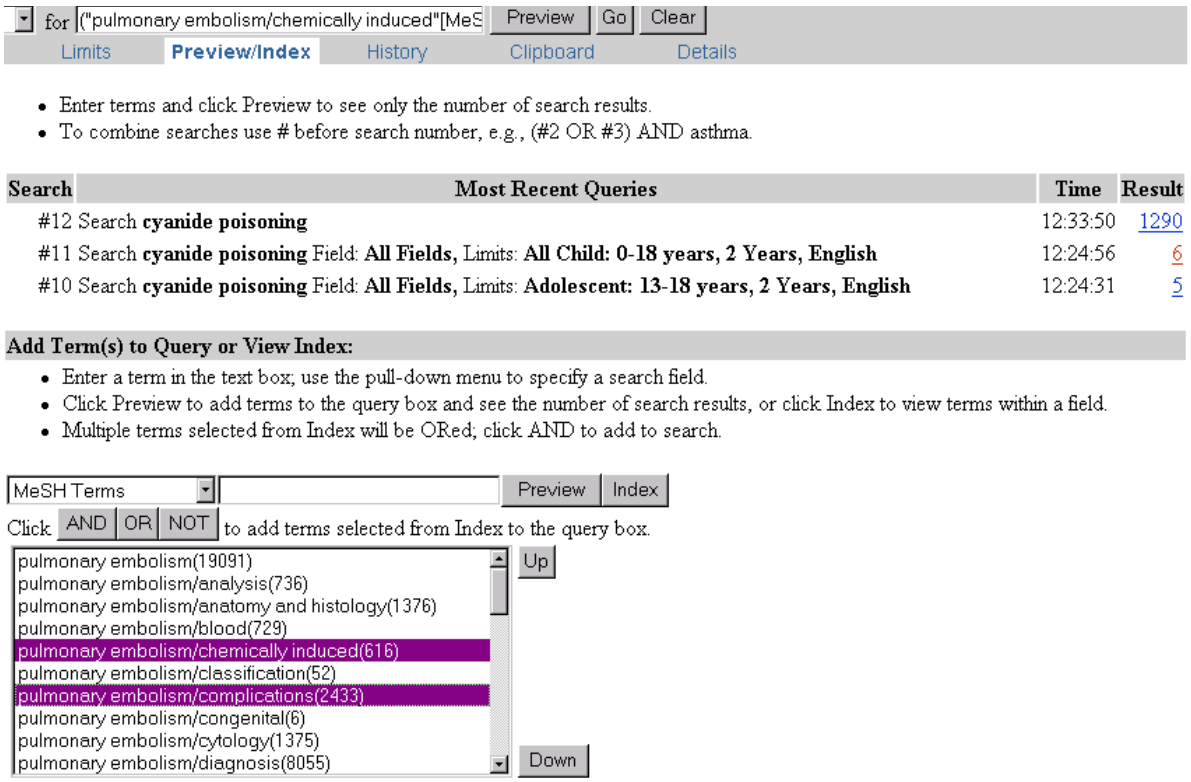


Preview/Index

- *Preview* allows you to see how many citations a search will retrieve
- *Index* allows you to select from a list of terms in a search field
- *Index* is especially useful when searching for known MeSH terms and their Subheadings
- Click on the *Preview/Index* option on the *Features* Bar
- Clicking the *Preview* button displays the number of citations the search retrieves without displaying the citations

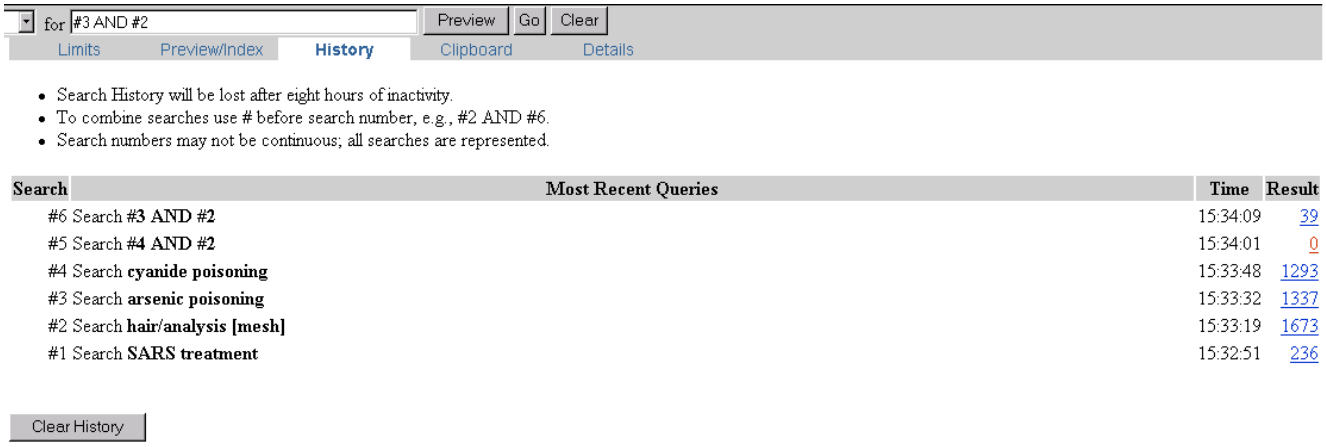


- Scroll down the bottom half of the page to use *Index*
- The number next to each term represents the number of postings for that specific term
- Combine multiple terms by using holding down the Control key on the keyboard while highlighting the selected terms
- Click on the *ADD, OR* or *NOT* buttons to insert the search terms in the query box
- Click on the *Go* button to run your search



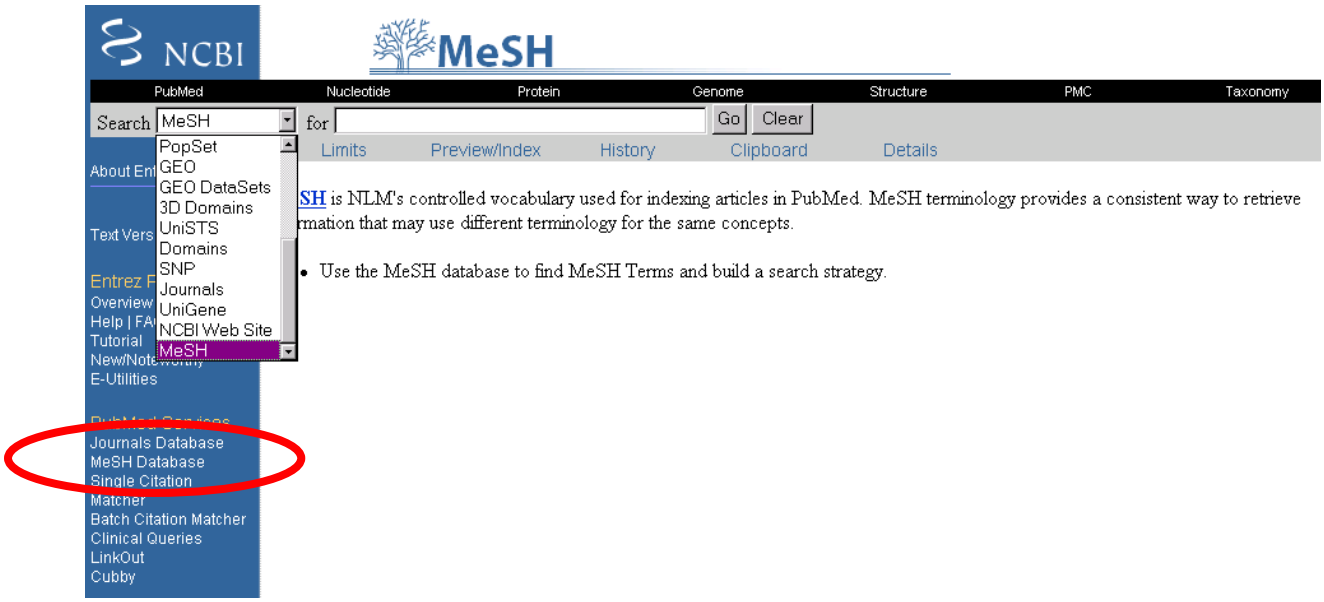
History

- *History* allows you to view your previous search strategies and results and to combine these search strategies
- Click on the *History* option on the *Features* bar
- In order for you to use this feature, your web browser must be set to accept cookies
- History search format: pound sign (#) search number Boolean operator pound sign search number (i.e. #17 AND #18)
- Boolean operators must be capitalized
- *History* retains 100 searches
- The search history will be lost after 8 hours of inactivity
- Click on the *Go* button to run your search
- The *Clear History* button will remove all previous searches from the list

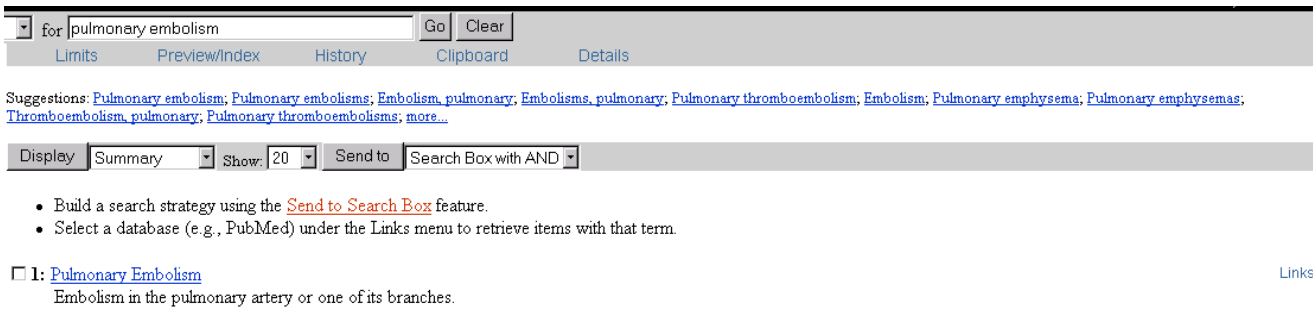


MeSH Database

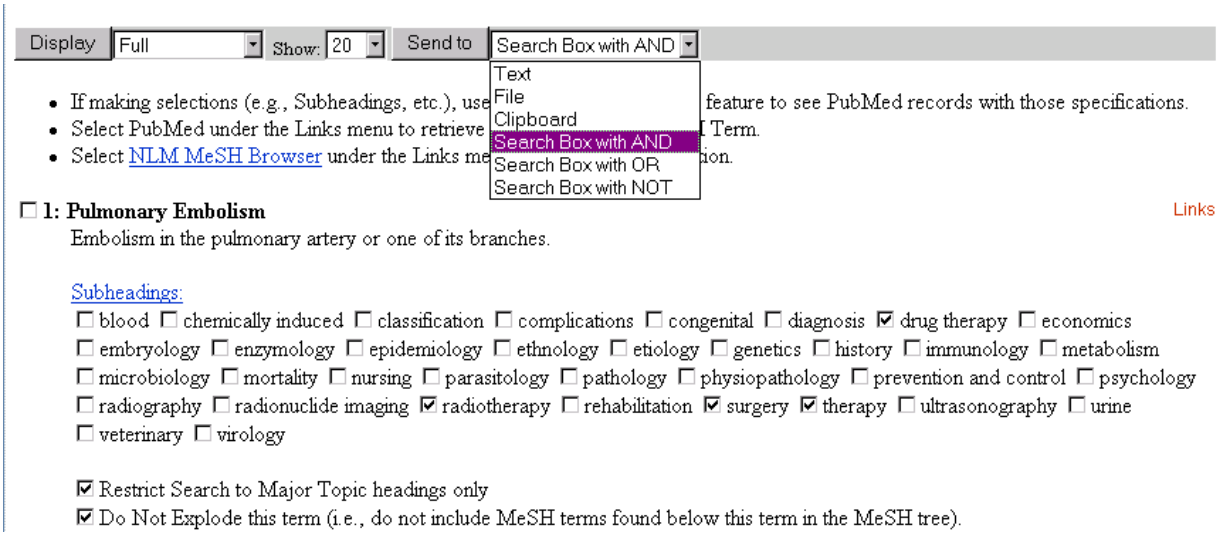
- The *MeSH Database* is a separate database in the Entrez system that interfaces with PubMed
- To open the *MeSH Database,* either click on the *MeSH Database* option on the left side blue menu bar or select it from the Search dropdown box.



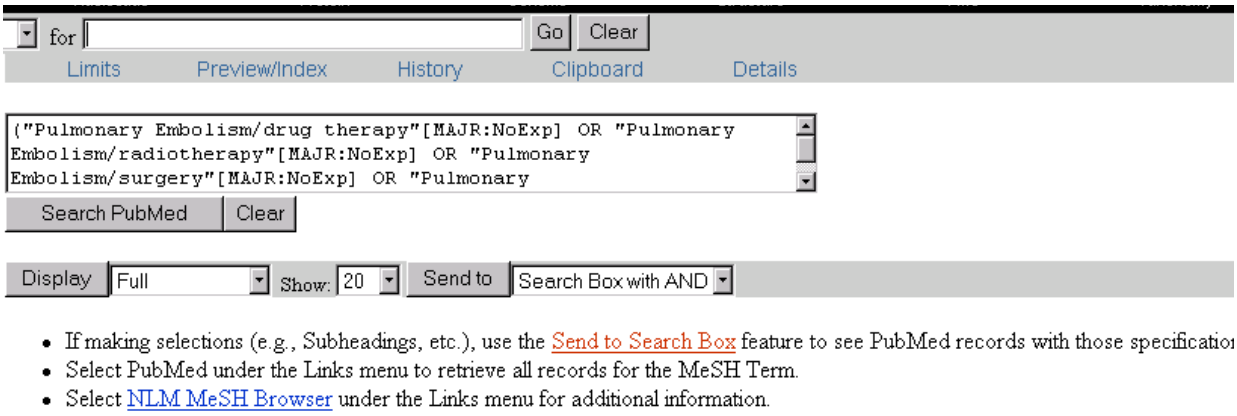
- Enter the search term(s) in the query box and click on the *Go* button
- The search results display MeSH terms in relevancy order
- *Suggestions* lists additional possibly related MeSH terms or Entry terms



- Click on the MeSH term to view the full display
- The full display screen includes *Subheadings*, *Entry terms* and the MeSH hierarchy
- Click in the boxes next to the desired *Subheadings*
- If the MeSH term should be a main topic in any results, click on the check box next to *Restrict Search to Major Topic headings only*
- If the results should not include any MeSH terms related to your selected MeSH term, click in the check box next to *Do Not Explode this item*
- The dropdown box next to the *Send to* button allows you to print (*Text*), download (*File*), save (*Clipboard*), or use the term to create a search strategy using the preferred Boolean term (*Search Box with AND, Search Box with OR, Search Box with NOT*)



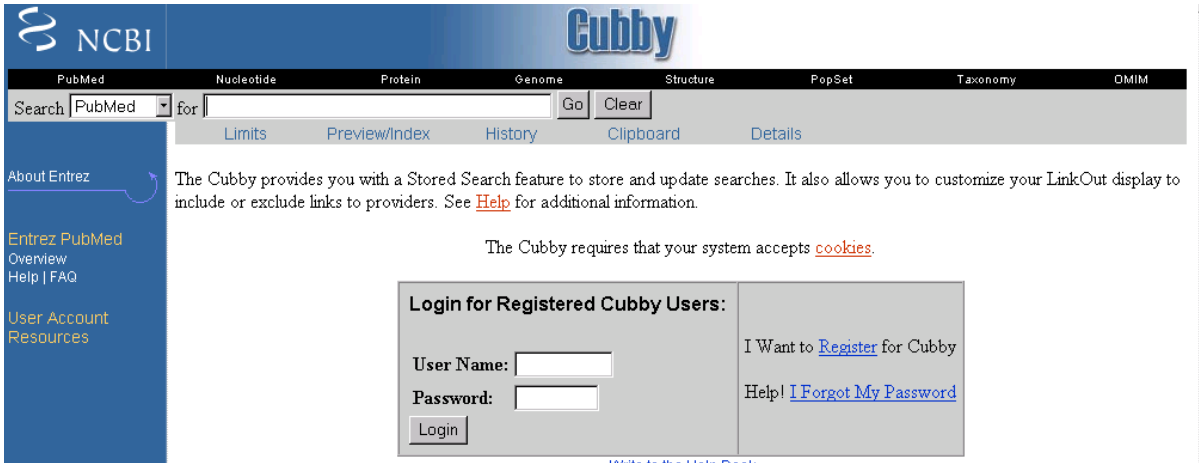
- You can add more terms to your search strategy by typing them in the query box
- Click on the *Search PubMed* button to run the search in PubMed



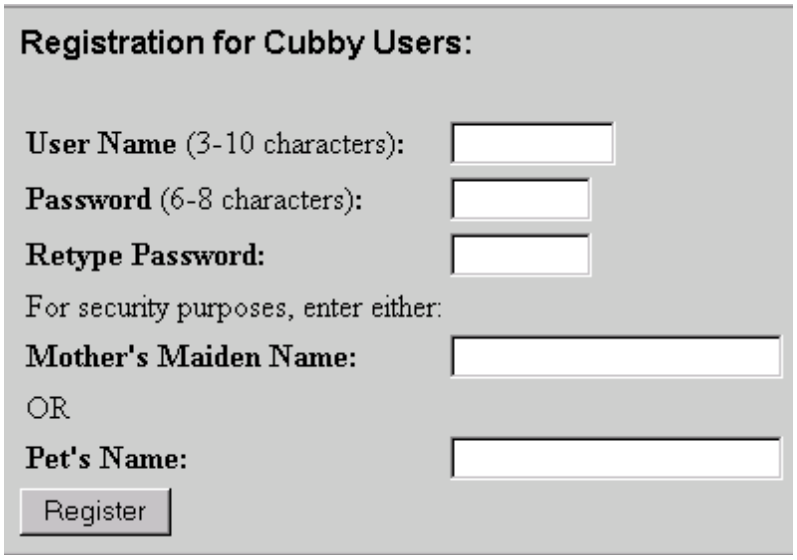
PUBMED FEATURES

Cubby

- In *Cubby*, you can store frequently used search strategies and an email address, and LinkOut and document delivery preferences
- Click on *Cubby* on the blue menu bar to register or to access your account
- In order for you to use this feature, your web browser must be set to accept cookies

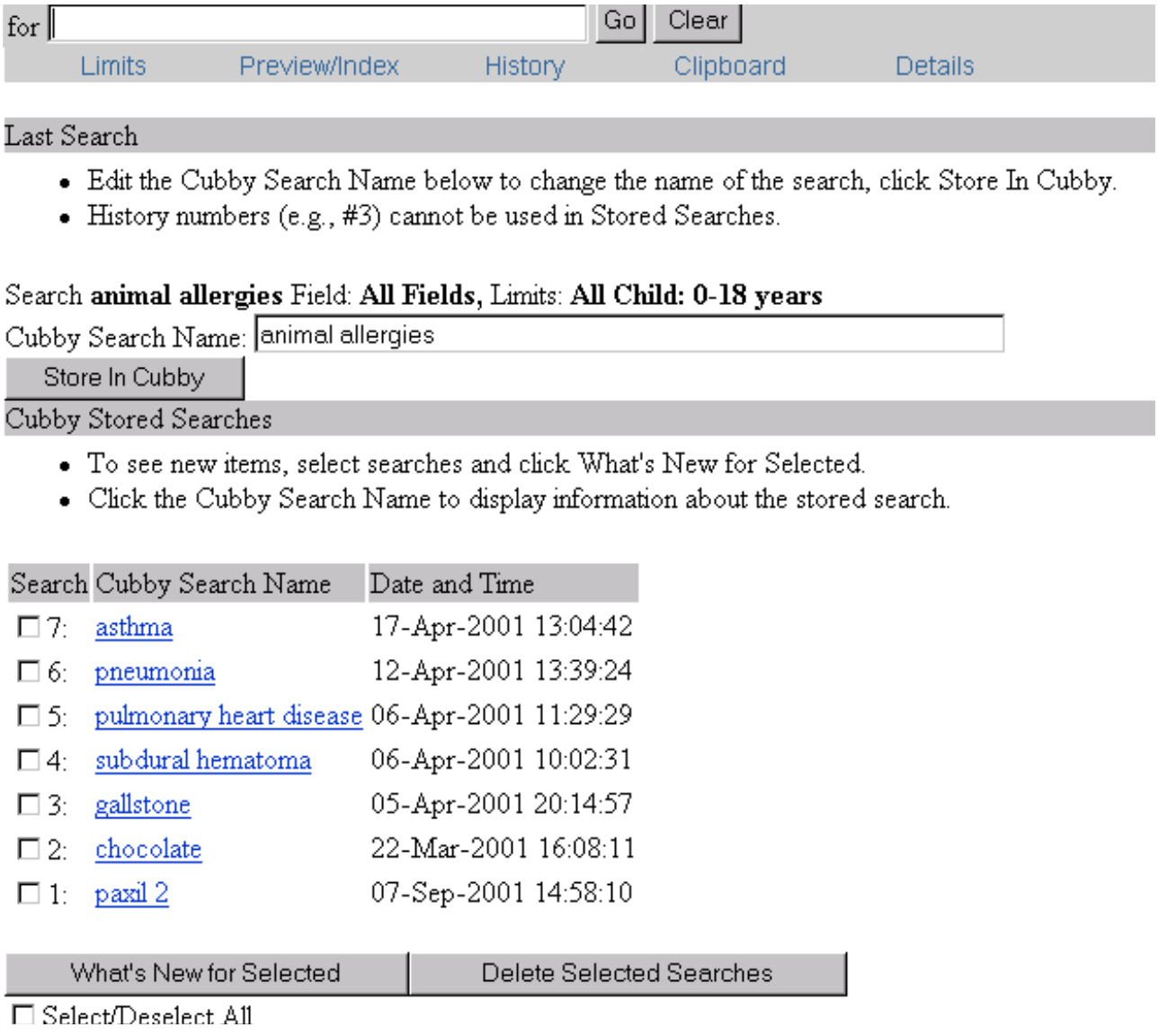


- Registration is free to access *Cubby*
- NLM does not store your User Name or Password



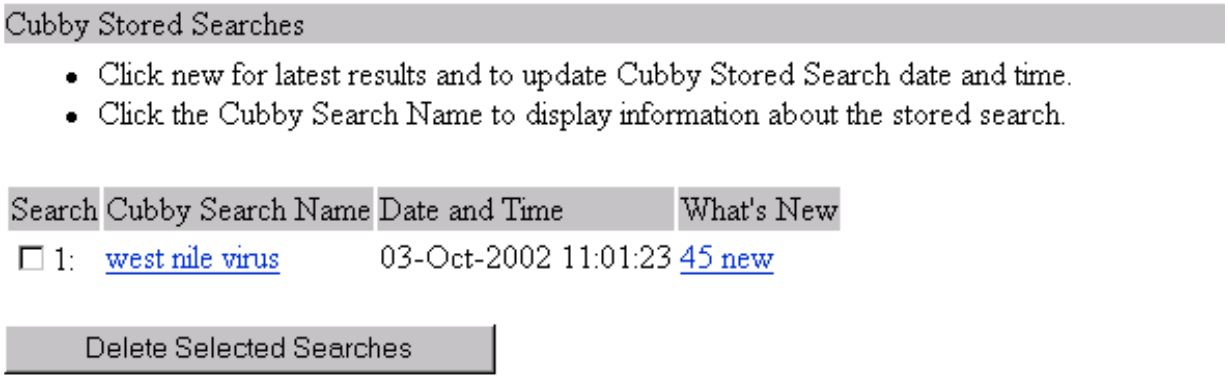
Stored Searches

- To store search strategies, create a search strategy in PubMed
- Click on the *Cubby* option on the blue menu bar and automatically your most recent search strategy is available for storing
- Create a name for the search strategy in the *Cubby Search Name* box
- Click on the *Store in Cubby* button and the search strategy is added to the *Stored Searches*
- To remove a *Stored Search*, click the check box next to the name and click on the *Delete Selected Searches* button



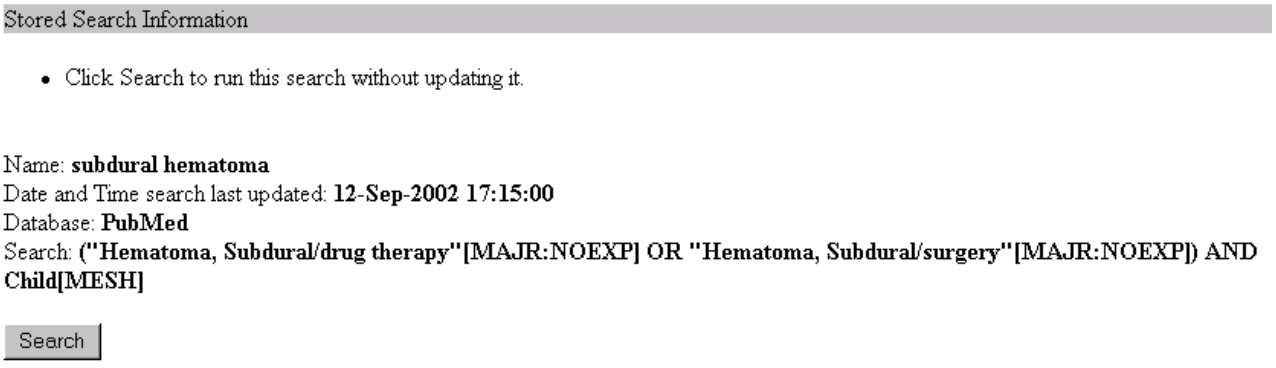
What's New for Selected

- To see if a search strategy yields any new citations, click on check box next to the search name and then click on *What's New for Selected*
- The last date the search was run is stored and automatically the citations retrieved are since that date
- Click on the number in the *What's New* column to retrieve the new results



Editing a Search Strategy

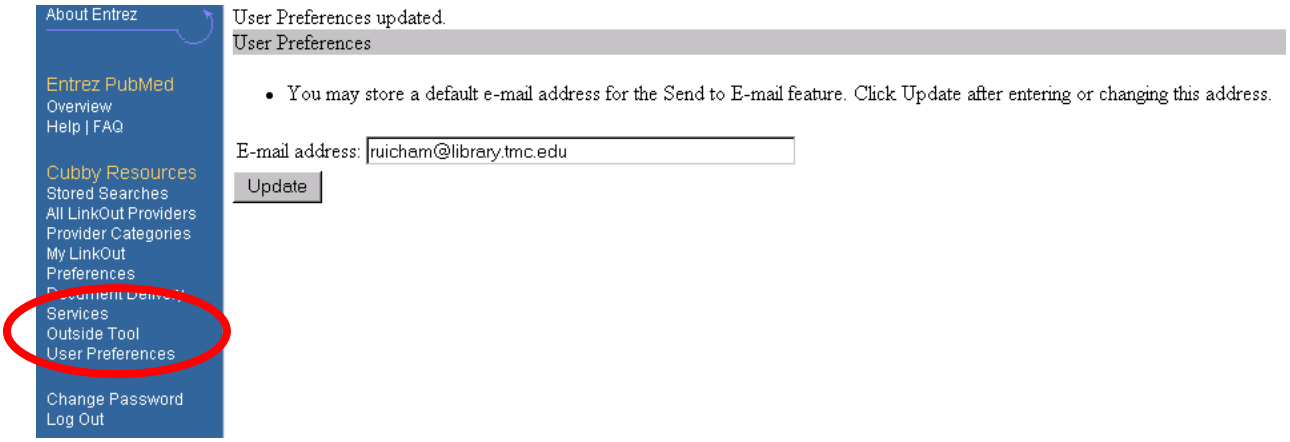
- To edit a search strategy, click on the search name in the *Stored Searches List*
- Click one the *Search* button to rerun the search in PubMed



- Revise the search strategy in PubMed
- Click on the *Cubby* option on the blue menu bar, then click on the *Store in Cubby button* to resave the search strategy

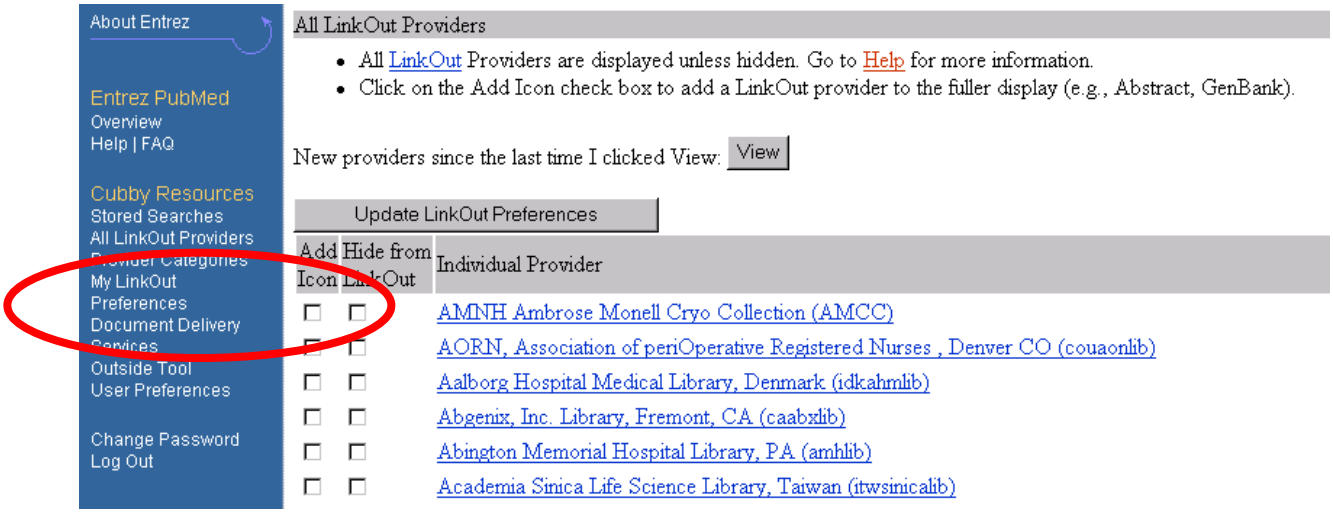
User Preferences

- To store a default email address that can be used with the *Send to: E-mail* option, in *Cubby* click on *User Preferences* on the blue menu bar
- Type the email address and click the *Update* button
- You must be logged into *Cubby* when using the *Send to: E-mail* option for this default address to display automatically
- The email address may be changed during sessions



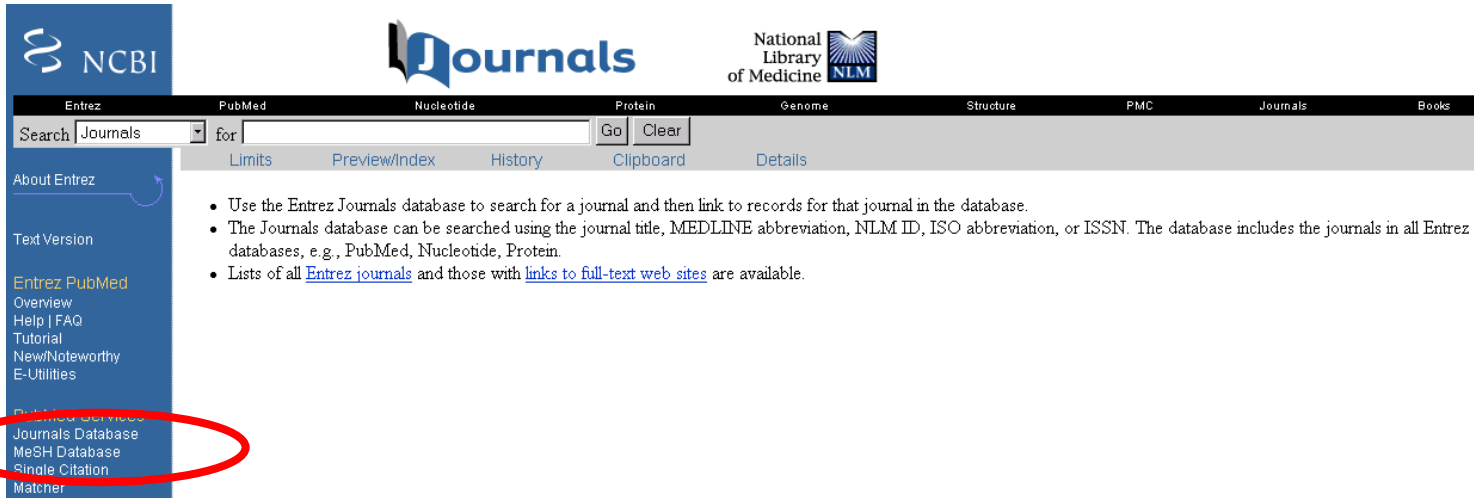
LinkOut Preferences

- To set LinkOut preferences, click on *All LinkOut Providers* or *Provider Categories*
- *All LinkOut Providers* lists publishers, aggregators, libraries, biological databases, sequence centers, and other Web resources with links in PubMed
- *Provider Categories* lists the broad categories (e.g. Literature) and then the subject categories (e.g. aggregators, libraries, publishers/providers)
- To view or update your preferences, click on *My LinkOut Preferences*



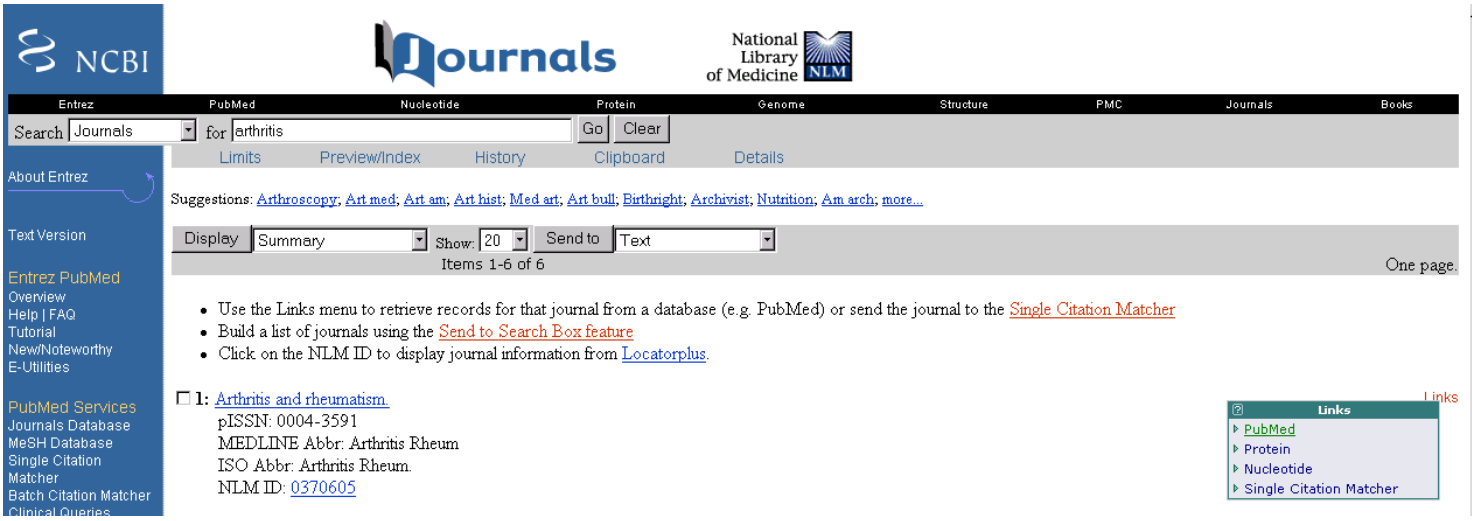
Journals Database

- The *Journals Database* allows you to search journals indexed in PubMed and other Entrez databases
- You can search by the journal title, MEDLINE abbreviation, NLM ID, ISO abbreviation, or ISSN
- The list of all the Entrez journals and those with full-text web sites is available from this page
- To open the *Journals Database,* either click on the *Journals Database* option on the blue menu bar or select it from the Search dropdown box.
- Enter the search term(s) in the query box and click the *Go* button



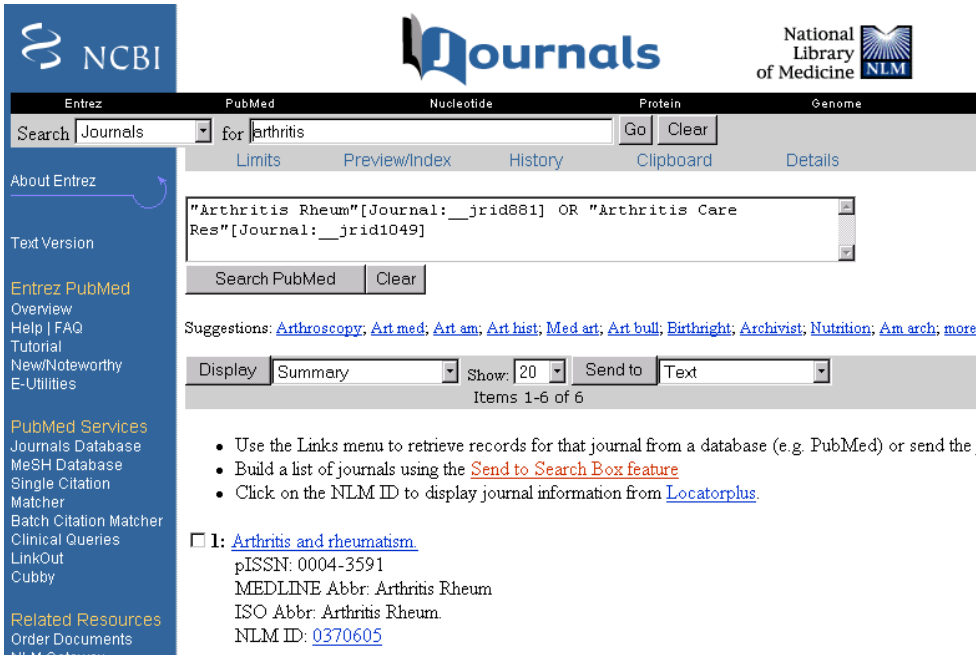
- The search results display journal titles in relevancy order
- *Suggestions* lists additional possibly related journal titles

- Clicking on the journal title displays the full journal record
- Clicking on the NLM ID number displays the journal title record in LOCATORplus, NLM's catalog
- Clicking on *Links* and selecting *PubMed* will retrieve all the citations in PubMed for the journal going back to its inclusion in MEDLINE or to 1953



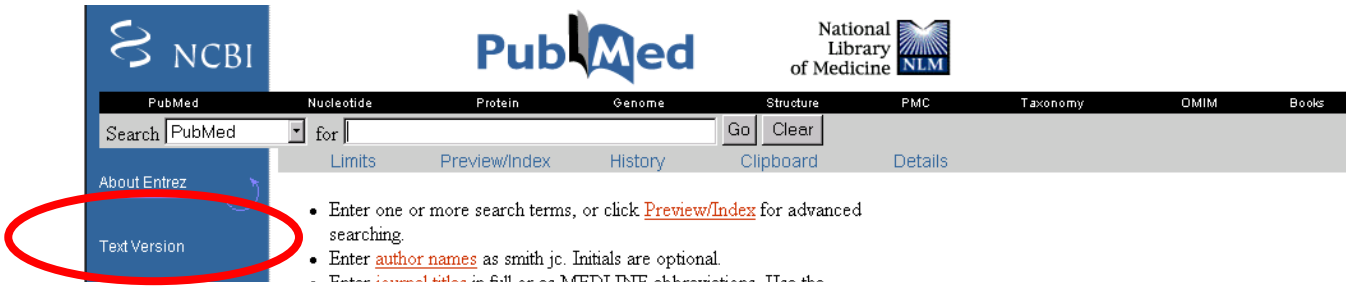
- The *Send to* button allows you to redisplay the results in a *Text* format, download a *File*, move selected results to the *Clipboard*, or build a search a PubMed search strategy within the *Search Box with OR*

- TIP: Using Cubby, the *Search Box with OR* feature allows you to save a permanent personalized list of journals titles. You will then be able to limit all future PubMed searches to these selected titles

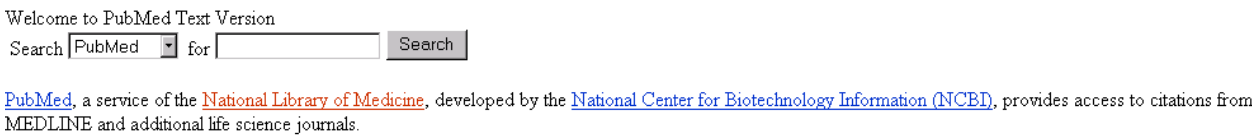


Text Version

- Click on the *Text Version* option on the blue menu bar

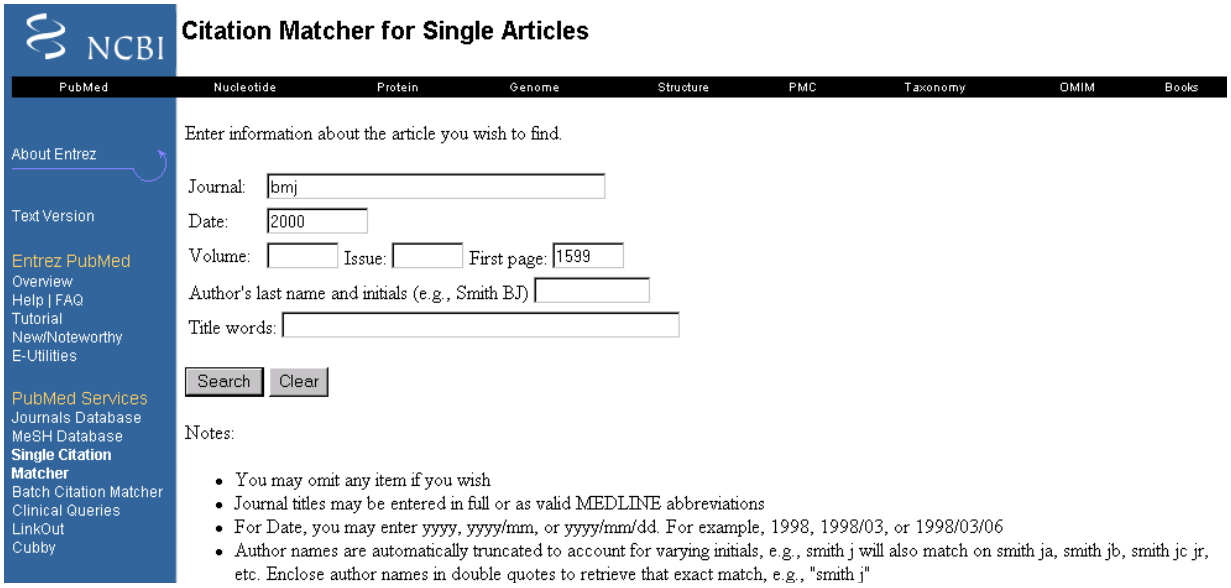


- The Text Version was created for users who require special adaptive equipment to access the Web

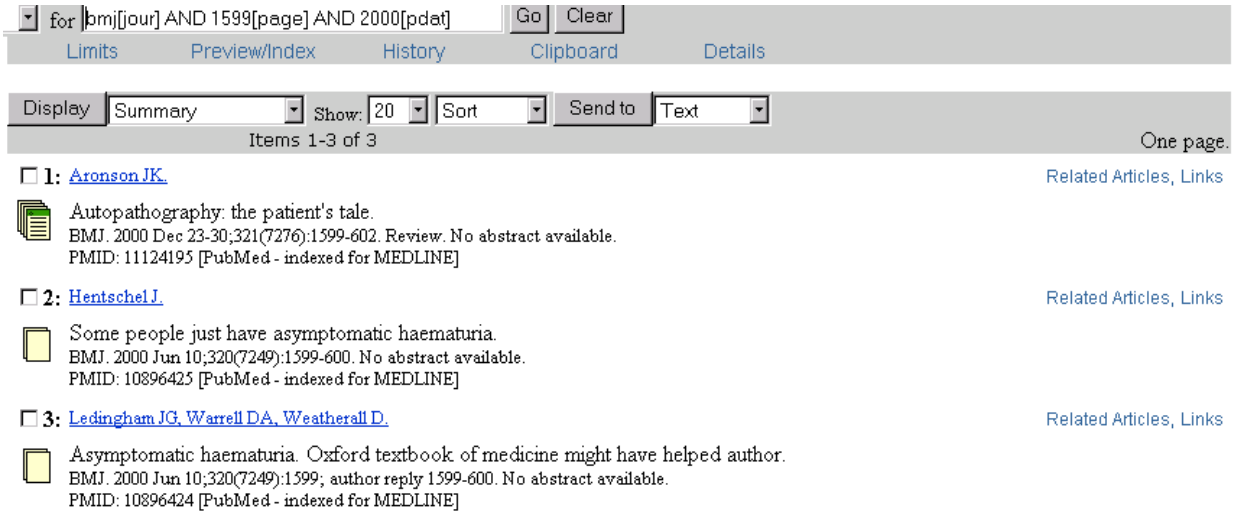


Single Citation Matcher

- Use *Single Citation Matcher* to find a full citation using partial citation information
- Click on the *Single Citation Matcher* option on the blue menu bar

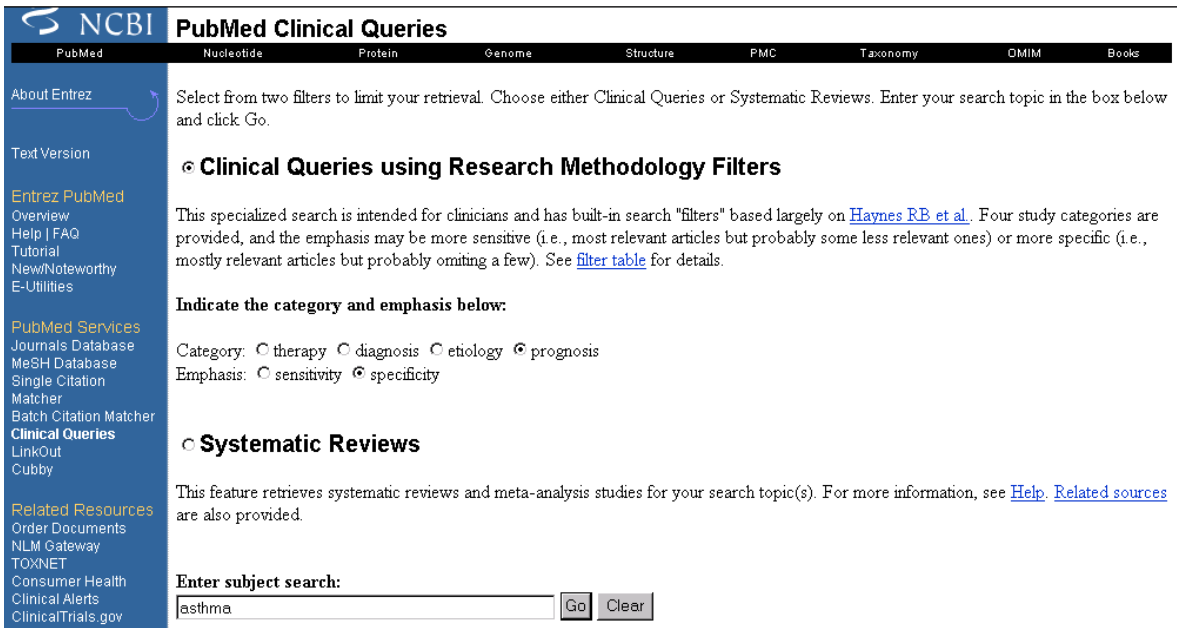


- Enter known citation information such as journal name, first page number, author name, etc.
- Click on the *Search* button
- Scroll through the results until you find the correct citation

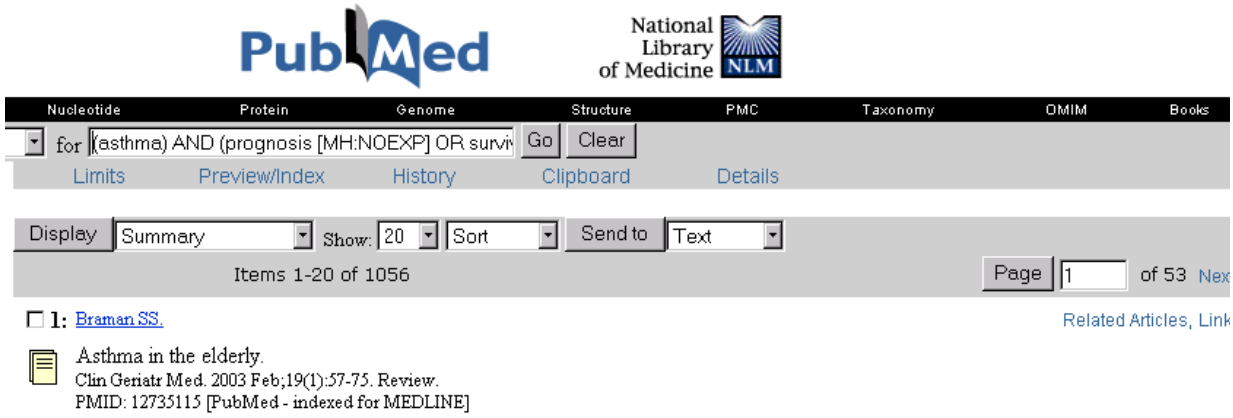


Clinical Queries/Systematic Reviews

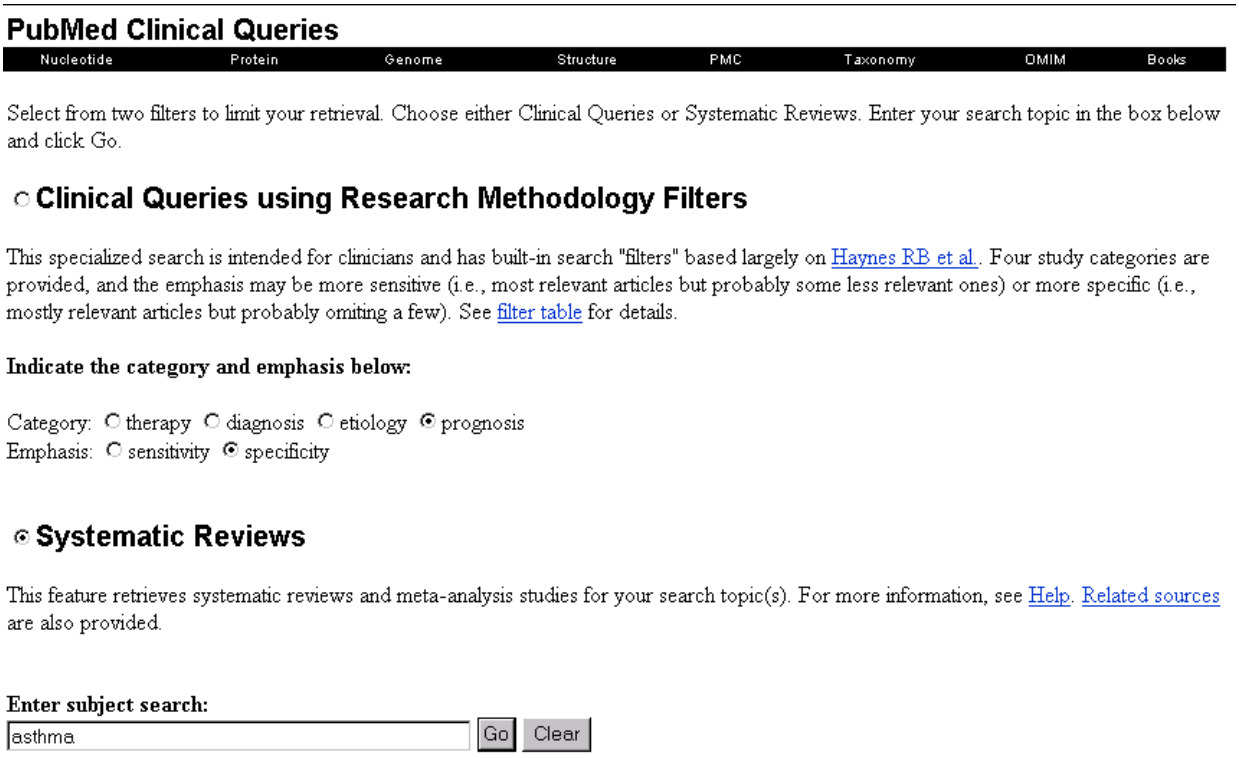
- *Clinical Queries* is a specialized search query with built-in search research methodology filters that is intended for clinicians
- Click on the *Clinical Queries* option on the blue menu bar
- See the *Clinical Queries Table* to see the terms added to your search request
- Select the radial button next to *Clinical Queries using Research Methodology Filters*
- Select a *Category* (Therapy, Diagnosis, Etiology, Prognosis)
- Select an *Emphasis: Sensitivity* includes relevant articles but probably some less relevant; *Specificity* retrieves more precise articles but omits some relevant ones
- Type in search term(s) and click on *Go*



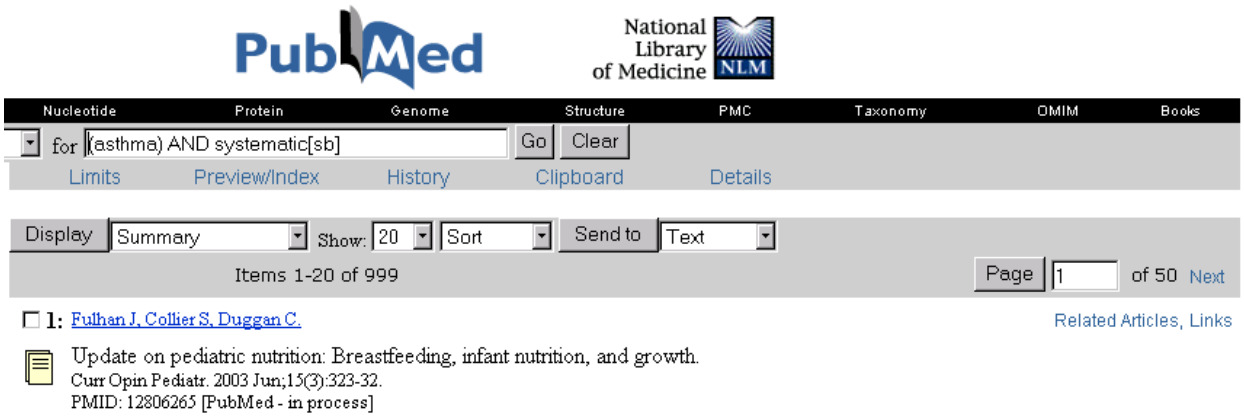
- The search is conducted in PubMed



- *Systematic Reviews* combines the search term with citations retrieved by PubMed's Systematic Reviews search strategy.
- For more information see: http://www.nlm.nih.gov/pubs/techbull/jf02/jf02_systematic_reviews.html
- Select the radial button next to *Systematic Reviews*
- Type in your search term(s) and click on *Go*



- The search is conducted in PubMed



Practice Searches:

1) I need all articles on sleep disorders secondary to closed head injuries.

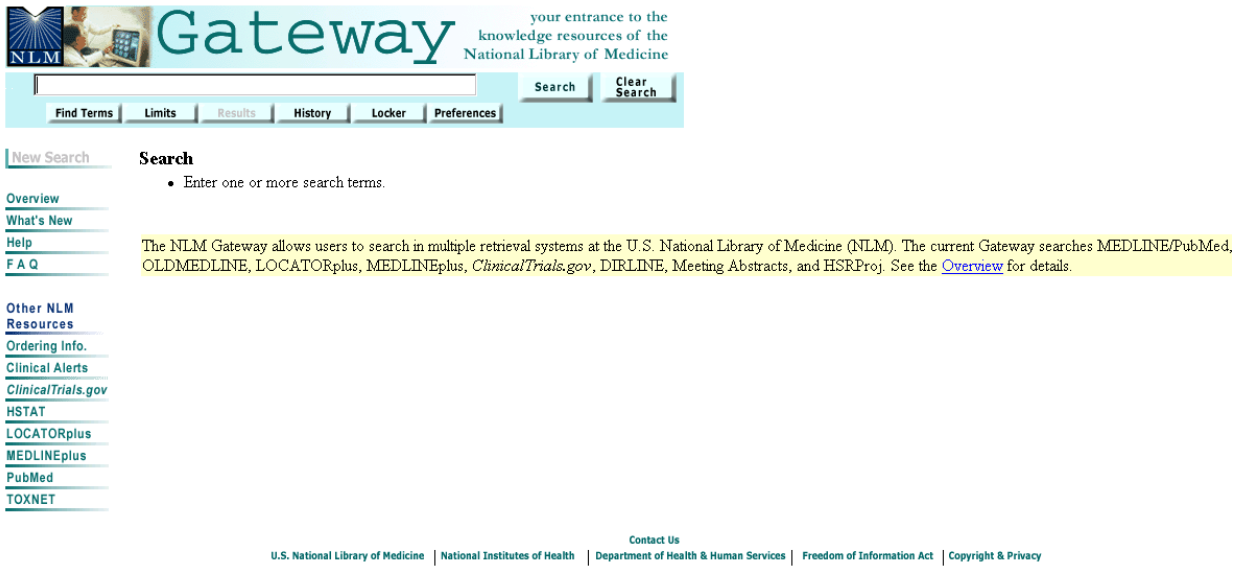
2) Does antibiotic prophylaxis prevent recurrent UTIs in children with anatomic abnormalities?

3) I need articles on conversion disorders with urinary and gastrointestinal incontinence.

OTHER NLM RESOURCES

NLM Gateway (http://gateway.nlm.nih.gov)

- The Gateway allows users to search NLM's Web site and many of its databases at once



***ClinicalTrials.gov* (http://clinicaltrials.gov/)**

- This sources gives access to information about clinical trials from NIH, other Federal agencies, as well as from the pharmaceutical industry
- Each record contains information on who is eligible and who to contact for more information

MEDLINEplus (http://medlineplus.gov/)

- MEDLINEplus is NLM's consumer health site
- It includes links to Full-Text information from reputable sources like NIH agencies, other federal agencies, and associations
- It includes information on over 650 conditions and diseases
- Also it has dictionary, encyclopedia and drug information
- A Spanish version is also available

BOOLEAN OPERATORS

Boolean Search Rules & Syntax
Boolean operators, AND, OR, NOT must be entered in UPPERCASE, e.g., vitamin c OR zinc.

PubMed processes all Boolean connectors in a left-to-right sequence. You can change the order in which PubMed processes a search statement by enclosing an individual concept in parentheses. The terms inside the set of parentheses will be processed as a unit and then incorporated into the overall strategy, e.g., common cold AND (vitamin c OR zinc).

If PubMed finds a phrase within a search strategy string that uses unqualified terms, it will automatically search the terms as a phrase rather than simply combining the individual words. For example, if you enter air bladder fistula in the PubMed query box, PubMed will search "air bladder" as a phrase. If you do not want this automatic phrase parsing, enter each term separated by the Boolean operator AND, e.g., air AND bladder AND fistula. Click Details to see how PubMed translated your search strategy.

Follow PubMed's search and syntax rules to enter search terms, specify the search field to be searched, and the Boolean operators in your search statement:

search term [tag] BOOLEAN OPERATOR search term [tag]

Examples of Boolean Search Statements:

dna [mh] AND crick [au] AND 1993 [dp]

OR
By combining two or more query terms (or sets) using OR, a set will be created which contains all the documents containing any of the query terms (or sets) (with duplicates eliminated), e.g., "heart attack OR myocardial infarction."

AND
By combining two or more query terms (or sets) using AND, a set will be created which contains only those documents which have each and every query term (or set), e.g., "blood pressure AND stroke."

NOT
By combining two query terms (or sets) using NOT, a set will be created that contains those documents with the first query term (or set), but which specifically excludes those documents with the second query term (or set), e.g., "health reform NOT health maintenance organizations."

PUBMED FIELD DESCRIPTIONS

Important Search Field Descriptions and Tags

Affiliation [AD] Institutional affiliation and address of the first author, and grant numbers.

All Fields [ALL] Includes all searchable PubMed fields.

Author Name [AU] The format to search for an author name is: last name followed by a space and up to the first two initials followed by a space and a suffix abbreviation, if applicable, all without periods or a comma after the last name.

Entrez Date [EDAT] Date the citation was added to the PubMed database.

Journal Title [TA] The journal title abbreviation, full journal name, or ISSN number.

Language [LA] The language in which the article was published. You can either enter the language or enter just the first three characters of most languages, e.g., chi [la] retrieves the same as chinese [la]. The most notable exception is jpn [la] for Japanese.

MeSH Major Topic [MAJR] A MeSH term that is one of the main topics discussed in the article.

MeSH Terms [MH] NLM's Medical Subject Headings controlled vocabulary of biomedical terms, which is used to describe the subject of each journal article in MEDLINE.

Personal Name as Subject [PS] Use this search field tag to limit retrieval to where the name is the subject of the article. The search rules for Author [au] apply to this field.

Publication Date [DP] The date that the article was published.

Publication Type [PT] Describes the type of material the article represents.

Subheadings [SH] Subheadings are used with MeSH terms to help describe more completely a particular aspect of a subject.

Text Words [TW] Includes all words and numbers in the title and abstract, and MeSH terms, subheadings, chemical substance names, personal name as subject, and MEDLINE Secondary Source (SI) field.

Title Words [TI] Words and numbers included in the title of a citation.

Title/Abstract Words [TIAB] Words and numbers included in the title and abstract of a citation.